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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/723,714	11/26/2003	Bing Ji	06299P2 USA	9797

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EXAMINER	
GOUDREAU, GEORGE A	
ART UNIT	**PAPER NUMBER**
1763	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/24/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/723,714	JI ET AL.	
	Examiner	Art Unit	
	George A. Goudreau	1763	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 October 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *44-49,52-54 and 57-60* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *44-49,52-54 and 57-60* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

George A Goudreau

GEORGE GOUDREAU
PRIMARY EXAMINER
1-07

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

1. Claims 45, and 47 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

-Claims 45, and 57 conflict with claim 44 upon which they depend.

(i.e.-Claim 45, and 47 recite that the at least one other compound is a chlorinated compound other than BCl3 while claim 44 recite that the one other compound is BCl3. Since claim 44 limits the at least one other compound to BCl3, claims 45, and 47 cannot then recite that the at least one other compound is a chlorinated compound other than BCl3.)

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 44-49, 52-54, and 58-60 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masayuki (JP 2003-203,907).

Masayuki discloses a process for cleaning the interior surfaces of a CVD reactor of deposits (i.e.-hafnium oxides, titanium oxide, zirconium oxides, etc.) using a plasma, which is comprised of a chlorinated gas (i.e.-BCl3, ClF3, etc.). This is discussed specifically in the abstract; and discussed in general on pages 1-7. This is shown in figures 1-6. Masayuki fails, however, to specifically disclose the following aspects of applicant's claimed invention:

-the specific etching process parameters, which are claimed by the applicant;

-the specific usage of a plasma etchant, which is comprised of (ClF3-BCl3);

-the specific remote activation of the gaseous etchant prior to it admission to the plasma etching chamber;

-the specific usage of an ALD apparatus to conduct the CVD process taught above; and

-the specific usage of an inert gas diluent in the plasma etchant

It would have been obvious to one skilled in the art to employ a plasma etchant, which is comprised of both BCl3, and ClF3 in the etching process, which is taught above, based upon the following. The reference teaches the equivalence in using either gas to conduct their etching process. Thus, it would have been obvious to one skilled in the art to use a plasma etchant, which employs both gases to conduct the etching process, which is taught above since each gas is used for the same purpose alone.

It would have been obvious to one skilled in the art to remotely activate the plasma etchant, which is used to clean the CVD chamber in the etching process, which is taught above, based upon the following. The remote activation of a plasma etchant used to clean a reactor is conventional or at least well known in the semiconductor processing arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for forming the plasma etchant in the process, which is taught above to the specific means, which are taught above.

It would have been obvious to one skilled in the art to use an inert gas as a diluent in the plasma etchant, which is taught above, based upon the following. The usage of an inert gas as a diluent in a plasma etchant is conventional or at least well known in the etching arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for forming the plasma etchant in the process, which is taught above.

It would have been obvious to one skilled in the art to use an ALD reactor to form the films in the CVD process, which is taught above based upon the following. The usage of an ALD reactor to form metal oxide films is conventional or at least well known in the coating arts. (The examiner takes official notice in this regard.) Further, this simply represents the usage of an alternative, and at least equivalent means for forming the films in the CVD process, which is taught above to the specific means, which are taught above.

It would have been prima facie obvious to employ any of a variety of different process parameters in the etching process, which is taught above. These are all well-known variables in the plasma etching art, which are known to affect both the rate and the quality of the plasma etching process. Further, the selection of particular values for these variables would not necessitate any undo experimentation, which would have been indicative of unexpected results.

Alternatively, it would have been obvious to one skilled in the art to employ the specific etching process parameters, which are claimed by the applicant based upon In re Aller as cited below.

Where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation.≅ In re Aller, 220 F. 2d 454, 105 USPQ 233, 235 (CCPA).

Further, all of the specific etching process parameters, which are claimed by the applicant are results affective parameters whose values are known to affect both the rate, and the quality of the plasma etching process.

5. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

6. Any inquiry concerning this communication should be directed to examiner George A. Goudreau at telephone number (571)-272-1434.

George A. Goudreau
Primary Examiner
Art Unit 1763